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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,037	10/31/2003	Robert L. Cobene II	200300643-1	8371
22879	7590	06/19/2008	EXAMINER	
HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400			GATES, ERIC ANDREW	
		ART UNIT	PAPER NUMBER	
		3726		
		NOTIFICATION DATE		DELIVERY MODE
		06/19/2008		ELECTRONIC

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/697,037

Filing Date: October 31, 2003

Appellant(s): COBENE ET AL.

Patrick C. Keane

For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 20 May 2008 appealing from the Office action mailed 20 December 2007.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relyed Upon**

2003/0086773 A1	LAWTON	5-2003
6,799,391	BERGHOLTZ ET AL.	10-2004
6,213,703	GARRIDO	4-2001
6,273,661	PAYNE	8-2001
2002/0067977 A1	COBENE, II ET AL.	6-2002

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1, 11, 12, 15, 16, 19, 22, 23, 32, 33, 36, and 39 stand rejected under 35 U.S.C. 102(e) as being anticipated by Lawton (U.S. Patent Publication 2003/0086773 A1).

Regarding claim 1, Lawton discloses a method of binding a text body to a cover 104/106 with an adhesive to form a bound document, the method comprising: applying an adhesive 110/112/114 to a contacting surface (the top edge and adjacent sides) of a plurality of sheets 102 of the text body on an individual sheet-wise basis; and adhering the plurality of sheets to the cover 104/106 on an individual sheet-wise basis by making line contact between the contacting surface and the cover and by curing (pressing

activates the adhesive and forms a cohesive bond) the adhesive (see paragraphs [0043] to [0045] and [0060] to [0061], and figures 8 and 9), wherein the applied adhesive 110/112/114 forms a non-zero contact angle with the contacting surface (portions 112 and 114 of the adhesive in figure 8 have a non-zero contact angle with respect to the contacting surface at the side of the sheets 102 where the adhesive portions end).

Regarding claim 11, Lawton discloses wherein the plurality of sheets 102 includes an unfolded sheet and the contacting surface is an edge of the unfolded sheet (see figure 8).

Regarding claim 12, Lawton discloses constraining the sheet 102 to maintain the edge straight (using alignment system 120, see figure 8).

Regarding claim 15, Lawton discloses wherein the contacting surface makes line contact with the cover 104/106 in an area of a spine 106 of the bound document (see figures 8 and 9).

Regarding claim 16, Lawton discloses wherein the adhesive 110/108 is a two-part adhesive system.

Regarding claim 19, Lawton discloses forming the cover around the text body (see figures 8 and 9).

Regarding claim 22, Lawton discloses wherein the applied adhesive 110 is a first part of a two-part adhesive system and the method comprises applying a second part 108 of the two-part adhesive system to the cover 104/106 prior to adhering the plurality of sheets to the cover on an individual sheet-wise basis (see figures 8 and 9).

Regarding claim 23, Lawton discloses wherein the applied first part 110 of the two-part adhesive system forms a non-zero contact angle with the contacting surface (at least at portion 112 of sheet 102(1) as described above in the rejection of claim 1).

Regarding claim 32, Lawton discloses wherein the plurality of sheets 102 includes an unfolded sheet and the contacting surface is an edge of the unfolded sheet (see figure 8).

Regarding claim 33, Lawton discloses constraining the sheet 102 to maintain the edge straight (using alignment system 120, see figure 8).

Regarding claim 36, Lawton discloses wherein the contacting surface makes line contact with the cover 104/106 in an area of a spine 106 of the bound document (see figures 8 and 9).

Regarding claim 39, Lawton discloses forming the cover around the text body (see figures 8 and 9).

Claims 3 and 24 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Lawton in view of Bergholtz et al. (U.S. Patent 6,799,391).

Regarding claims 3 and 24, Lawton discloses the invention substantially as claimed, except Lawton does not disclose that a viscosity of the adhesive is greater than 1000 centipoises and less than 15,000 centipoises. Bergholtz et al. teaches the use of an adhesive that has a viscosity in the range of 1,500 to 4,500 centipoises for the purpose of having it be readily usable in the printing machinery employed. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was

made to have combined the method of Lawton with the adhesive of Bergholtz et al. in order to have a method of binding that includes an adhesive that has the desired viscosity for the adhesive applicator used.

Claims 4, 5, 25, and 26 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Lawton in view of Garrido (U.S. Patent 6,213,703).

Regarding claims 4, 5, 25, and 26, Lawton discloses the invention substantially as claimed, except Lawton does not disclose preparing each of the plurality of sheets of the text body along the contracting surface prior to applying the adhesive, or wherein preparing increases a surface area of the contacting surface, exposes a plurality of base fibers of the sheets, or increases the surface area and exposes the plurality of base fibers. Garrido teaches a method of binding books in which the edges of the sheets of paper are cut using a knife 50 such that the fibers of the paper are exposed for the purpose of improving the adhesiveness of the glue applied to the spine of the book block. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to have combined the method of Lawton with the edge preparation of Garrido in order to have a method of binding in which the papers are bound to the book in a stronger manner.

Claims 6-10, 17, 18, 20, 21, 27-31, 37, 38, 40, and 41 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Lawton in view of Payne (U.S. Patent 6,273,661).

Regarding claims 6-10, 17, 18, 20, 21, 27-31, 37, 38, 40, and 41, Lawton discloses the invention substantially as claimed, except Lawton does not disclose wherein applying the adhesive includes dispensing the adhesive from a dispenser, the dispenser including a time-pressure system, a piston-valve system, an auger-valve system, or a jetting system; wherein applying the adhesive includes dispensing the adhesive from a dispenser including a Micro-Electro-Mechanical System; wherein the Micro-Electro-Mechanical System is a thermal ink jet device; wherein applying the adhesive includes dispensing the adhesive from a dispenser including a Micro-Electro-Mechanical System, the adhesive is dispensed as a plurality of individual sub-beads on the contacting surface; or wherein the Micro-Electro-Mechanical System is a thermal ink jet device.

Payne teaches a method of binding that utilizes a thermal ink jet for the purpose of firing a plurality of individual drops of glue and thereby forming a predetermined adhesive binding position (see column 1, line 50 to column 2, line 24). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to have combined the method of Lawton with the thermal ink jet system of Payne in order to have a method of binding which is low cost and adaptable to a wide variety of implementations.

The modified invention of Lawton does not disclose that the adhesive is dispensed as a continuous bead on the contacting surface. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the ink jet device to fire drops of adhesive at a rate in which the adhesive

forms a continuous bead on the contacting surface for the purpose of having the sheet adhered to the cover without any spaces in the bond, thereby causing gaps which could expand to unattach the sheet from the cover, because it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges (the rate of droplet formation) involves only routine skill in the art.

The modified invention of Lawton does not distinctly disclose that the volume of each individual sub-bead (drop) is less than or equal to ten nanoliters, or that a volume of the continuous bead is less than or equal to three microliters. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the ink jet device to fire whatever size sub-bead or continuous bead was desired for the purpose of providing more or less adhesion between the sheets and the cover, because it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

The modified invention of Lawton does not distinctly disclose wherein applying the adhesive places a plurality of nanoliter volume beads on the contacting surface at an application rate of no slower than 1 bead per 100 microseconds. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the ink jet device to fire the beads at whatever speed was desired for the purpose of providing more or less adhesion between the sheets and the cover, because it has been held that where the general conditions of a claim are disclosed in

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the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

The modified invention of Lawton does not distinctly disclose wherein the plurality of sheets includes a sheet of 20 lb bond paper or a cellulosic sheet, the adhesive is a light curable adhesive having a viscosity of 10,000 to 12,000 centipoises, a volume of each individual sub-bead is less than or equal to ten nanoliters, and the adhesive cures in less than or equal to 20 seconds to bond the contacting surface to the cover. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used whatever paper or sheet was desired for the purpose of having a lighter book or stronger pages, to have used whatever viscosity of adhesive was desired for the purpose of improving the flow through the ink jet device, to have modified the ink jet device to fire whatever size sub-bead was desired for the purpose of providing more or less adhesion between the sheets and the cover, and to have chosen an adhesive that cures at a rapid rate for the purpose of increasing the speed of book production, because it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

The modified invention of Lawton does not distinctly disclose wherein the adhesive has a first surface energy, the contacting surface has a second surface energy, and a difference between the first surface energy and the second surface energy is from 13 to 25 dynes per cm; or wherein the plurality of sheets have a surface energy of 30 to 37 dynes per cm, the adhesive is a light curable adhesive having a

surface energy of 50 to 55 dynes per cm, and wherein calculations for surface energy follow the method of Owens and Wendt are based on Young's equation, and the surface energy is determined from contact angles of a polar solvent and a nonpolar solvent. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected adhesive and sheets having whatever surface energy was desired for the purpose of increasing or decreasing the bond between the sheets and the cover based on whatever strength is desired, because it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

Claims 13, 14, 34, and 35 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Lawton in view of Cobene, II et al. (U.S. Patent Publication 2002/0067977 A1).

Regarding claims 13, 14, 34, and 35, Lawton discloses the invention substantially as claimed, except Lawton does not disclose wherein the plurality of sheets includes a folded sheet and the contacting surface is a folded edge of the folded sheet, or constraining the folded sheet to maintain the folded edge straight. Cobene, II et al. teaches a method of book binding which uses folded sheets 90 that are aligned with respect to perforations 92 at the edge of the sheets, in order to form a text body in which the sheets are properly aligned for the purpose of increasing the binding strength of the bound text body. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to have combined the method of

Lawton with the sheets of Cobene, II et al. in order to have a method of binding in which the papers are bound to the book in a manner that improves the performance of the bookbinding system.

**(10) Response to Argument**

Appellant's argument that "The Lawton publication does not disclose applying an adhesive to a contacting surface of a plurality of sheets of a text body on an individual sheet-wise basis, wherein the applied adhesive forms a non-zero contact angle with the contacting surface" is not persuasive. As seen in figure 8 of Lawton, the contacting surface of each sheet 102 (the portion of the sheet that contacts the adhesive 110/112/114) includes the top edge and the sides of the sheet. The top edge portion of each sheet is adhered to portion 106 of the cover 104/106 in a line connecting the tops of the sheets and the cover portion 106, on an individual sheet-wise basis. The applied adhesive (portions 112 and 114) forms a non-zero contact angle (approximately 90 degrees at the bottom ends of the adhesive portions 112/114, as seen in figure 8) with the contacting surface (the side portions) of each sheet 102.

Appellant argues that "Appellants' claim 1 recites that the 'contacting surface' is a surface which makes 'line contact' with the cover. The applied adhesive of Appellants' claim 1 forms 'a non-zero contact angle' with this contacting surface. Thus, claim 1 distinguishes over the Lawton document wherein the sides of the sheets 102 do not constitute contacting surfaces which make 'line contact' with a cover." This argument is not persuasive because there is nothing in Appellant's claim 1 that requires that the

contacting surface, which is defined as the surface to which the adhesive is applied, must only be formed on a single side or edge of the sheet. The claim also does not prevent different portions of the contacting surface from being used to define the line contact with the cover and the non-zero contact angle of the adhesive.

Appellant's remaining arguments are moot, as they do not overcome the rejection of claim 1.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Eric A. Gates/

Examiner, Art Unit 3726

Conferees:

/David P. Bryant/

David P. Bryant

Supervisory Patent Examiner, Art Unit 3726

/Marc Jimenez/

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